

WHAT IS CLAIMED IS:

1. A method of applying patterned materials for manufacture of a flat panel light source, comprising:

- a) providing a flexible continuous substrate;
- b) providing one or more application stations, each application station

having:

- i) one or more stationary sources of material,
 - ii) a supply of discrete patterned masks for defining a pattern of material to be applied to the substrate,
 - iii) means for attaching the discrete patterned masks to the substrate;
 - iv) means for transporting the substrate and the patterned mask in registration past the one or more stationary sources of material, and
 - v) means for delivering the masks one at a time to the transporting means; and
- c) transporting the substrate and the masks past the one or more application stations.

2. The method claimed in claim 1, wherein the stationary source is a linear source arranged orthogonal to the direction of transport.

3. The method claimed in claim 1, wherein the stationary sources are arranged in parallel with respect to the direction of transport.

4. The method claimed in claim 1, wherein the application stations are arranged in parallel with respect to the direction of transport.

5. The method claimed in claim 1, wherein the light source is an OLED light source.

6. The method claimed in claim 1, wherein the materials are light emissive materials, semiconductor materials, conductors, or dielectrics.

7. The method claimed in claim 1, wherein the mask is a rigid sheet.

8. The method claimed in claim 1, wherein the mask is a flexible sheet.

9. The method claimed in claim 1, further comprising the steps of cleaning material from the masks and reusing the masks.

10. A flat panel light source made by the method of claim 1.

11. The method claimed in claim 1, wherein the masks are discarded after a single use.

12. The method claimed in claim 1, wherein the substrate is a web mounted on a supply roller located on one side of the application station(s).

13. The method claimed in claim 1, further comprising the step of cutting the substrate into sheets after deposition of the material.

14. The method claimed in claim 1, wherein the stationary sources are arranged in parallel with respect to the direction of transport.

15. The method claimed in claim 1, further comprising the step of shifting the mask relative to the substrate in a direction perpendicular to the direction of transport between sources.

16. The method claimed in claim 1, wherein the mask is a magnetic material and the means for attaching the mask to the substrate is a magnet located on an opposite side of the substrate from the mask.

17. The method claimed in claim 16, wherein the means for attaching the mask includes a reference surface for locating the substrate with respect to the source of material.

18. The method claimed in claim 16, wherein the magnet is a fixed magnet.

19. The method claimed in claim 16, wherein the magnet is conveyed along with the substrate.

20. The method claimed in claim 1, wherein the means for attaching the mask to the substrate is a mechanical clamp.

21. The method claimed in claim 20, wherein the mechanical clamp includes means for maintaining the substrate in a planar configuration.

22. The method claimed in claim 1, wherein the mechanical clamp includes a rectangular frame having clamps on two opposing edges.

23. The method claimed in claim 1, further comprising the step of displacing the mask in a direction orthogonal to the direction of transport of the substrate between application stations.

24. Apparatus for applying patterned materials to a flexible continuous substrate for manufacture of a flat panel light source, comprising:

- a) one or more application stations, each application station having:
 - i) one or more stationary sources of material,

- ii) a supply of discrete patterned masks for defining a pattern of material to be applied to the substrate,
 - iii) means for attaching the discrete patterned masks to the substrate;
 - iv) means for transporting the substrate and the patterned mask in registration past the one or more stationary sources of material, and
 - v) means for delivering the masks one at a time to the transporting means; and
- b) means for transporting the substrate and the masks past the one or more application stations.

25. The apparatus claimed in claim 24, wherein the stationary source is a linear source arranged orthogonal to the direction of transport.

26. The apparatus claimed in claim 24, wherein the stationary sources are arranged in parallel with respect to the direction of transport.

27. The apparatus claimed in claim 24, wherein the application stations are arranged in parallel with respect to the direction of transport.

28. The apparatus claimed in claim 24, wherein the light source is an OLED light source.

29. The apparatus claimed in claim 24, wherein the materials are light emissive materials, semiconductor materials, conductors, or dielectrics.

30. The apparatus claimed in claim 24, wherein the mask is a rigid sheet.

31. The apparatus claimed in claim 24, wherein the mask is a flexible sheet.

32. The apparatus claimed in claim 24, further comprising the steps of cleaning material from the masks and reusing the masks.

33. The apparatus claimed in claim 24, wherein the masks are discarded after a single use.

34. The apparatus claimed in claim 24, wherein the substrate is a web mounted on a supply roller located on one side of the application station(s).

35. The apparatus claimed in claim 24, further means for cutting the substrate into sheets after deposition of the material.

36. The apparatus claimed in claim 24, wherein the stationary sources are arranged in parallel with respect to the direction of transport.

37. The apparatus claimed in claim 24, further comprising means for shifting the mask relative to the substrate in a direction perpendicular to the direction of transport between sources.

38. The apparatus claimed in claim 24, wherein the mask is a magnetic material and the means for attaching the mask to the substrate is a magnet located on an opposite side of the substrate from the mask.

39. The apparatus claimed in claim 38, wherein the means for attaching the mask includes a reference surface for locating the substrate with respect to the source of material.

40. The apparatus claimed in claim 38, wherein the magnet is a fixed magnet.

41. The apparatus claimed in claim 38, wherein the magnet is conveyed along with the substrate.

42. The apparatus claimed in claim 24, wherein the means for attaching the mask to the substrate is a mechanical clamp.

43. The apparatus claimed in claim 42, wherein the mechanical clamp includes means for maintaining the substrate in a planar configuration.

44. The method claimed in claim 24, wherein the mechanical clamp includes a rectangular frame having clamps on two opposing edges.

45. The apparatus claimed in claim 24, further means for displacing the mask in a direction orthogonal to the direction of transport of the substrate between application stations.